

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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CONTENTS

Editorial Comment	PAGE
The Line of Least Resistance	27
Controllability	29
Hawker Single-Seater Fighters for Denmark	30
Aviation in Ireland	33
Security in the Air	34
Correspondence	35
Royal Aeronautical Society 60th Anniversary	36
Federation Aeronautique Internationale	36
An Air-Cooled Liberty Engine	37
Across Australia in Two Days	38
Light 'Plane Club Doings	38
Royal Air Force	39
R.A.F. Intelligence	39
Society of Model Aeronautical Engineers	40
Imports and Exports	40

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1926

Jan. 21	....	Maj. J. S. Buchanan. "The Schneider Cup Race, 1925," before R.Ae.S.
Jan. 26	....	Lieut. Olechnovitch. "The Care and Maintenance of Tools as an Important Factor in Workshop Routine," before Inst.Ae.E.
Feb. 4	....	Joint Meeting of R.Ae.S. and Inst.A.E. at R. Soc. of Arts. Mr. C. L. Lawrance, "American Aircraft Engine Development."
Feb. 9	....	Informal Meeting, Inst.Ae.E.
Feb. 25	....	Mr. A. J. Cobham. "Long-Distance Aeroplane Flights," before R.Ae.S.
Mar. 4	....	Maj. G. H. Scott. "Development of Airship Mooring," before R.Ae.S.
Mar. 9	....	Mr. O. E. Simmonds, M.A., A.F.R.Ae.S., M.I.Ae.S. "The Development of Civil Marine Aircraft," before Inst.Ae.E.
Mar. 18	....	Flight-Lieut. H. Cooch. "Landing Aeroplanes in Fog," before R.Ae.S.
April 13	....	Mr. S. H. Evans, B.Sc. "The Performance of Modern Aircraft—with special reference to the Variable Wing," before Inst.Ae.E.

EDITORIAL COMMENT.



The Line of Least Resistance

BRITAIN'S history in the air, since the war, 1914-18, has been a peculiar one. After the war we reduced what was then the most magnificent Air Force in the world, to a mere nucleus. Personnel was discharged on a wholesale scale. Materiel was stored or destroyed. Research was reduced to a minimum, all the aircraft construction firms tottered, figuratively, on the brink of bankruptcy, and more than one disappeared. In short, the nation revelled in an orgy of "economy." Great Britain having, in a spirit of example and of goodwill towards all men, sacrificed her leading position in the air, won at enormous cost in blood and treasure during the war, took time to look around, when lo and behold, with the exception of Germany (at one time imagined to be conquered), other nations had signally failed to follow suit. Not only did the great nations maintain their air strength, but a number of smaller nations were quick to realise the vast possibilities which an air force offered, and were commencing to build up air forces of their own. It speedily became clear that we had been over prompt in indulging in our good intentions—and in imagining that we were saving money on defence. Somewhat of a panic was the not unnatural result, and by 1923 the Government had realised that "economy" could be, and indeed had been, carried too far, in fact to the verge of foolhardiness. In that year an air programme was adopted which at the time was considered to represent the minimum necessary for the defence of the country against air attack. During the following years the 1923 policy was adhered to by successive Governments (including the Labour Government of 1924), and our air defences were slowly but gradually being built up—much too slowly in the opinion of many—until it had become accepted that no Government would dare again to contemplate such drastic "cuts" as those which shortly after the war very nearly resulted in the total disappearance of the British aircraft industry. Yet we are now told that reductions almost as drastic are contemplated. The Government—a Conservative

one at that—is reported to be planning the postponement of the home defence scheme which has for several years now been regarded by all parties as essential to the safety of the country.

It is obvious to anyone who makes any pretence of having given the subject more than a passing thought that the pivot of the whole position is the aircraft industry. Unless that industry is kept alive, and kept alive to such an extent as to be capable of immediate expansion in case of emergency, our air defence must rest on a very insecure basis. Yet it appears that this vital industry is again to be faced with starvation, and that at a time when more than ever a continuity of policy is essential. The British aircraft industry in the past has suffered—more than most people realise—from a lack of such continuity. Orders have been given by fits and starts, works have been feverishly busy for short periods, followed by long waits for another order. One result has been the inevitable, viz.: that it has not been an easy matter to attract finance to the industry, and what is, perhaps, more important still from a national point of view, such few machines as have been ordered and delivered have necessarily been a good deal more costly than they need have been if the system of placing orders had been continuous instead of intermittent. During the “economy” years some 20 aircraft firms succeeded in weathering the storm, at what sacrifice will probably never be fully realised, and it came to be accepted that if the country were to enjoy any measure of security it would be highly dangerous to go below that number. Yet if the contemplated reductions in air expenditure reported are really to come about, we venture to predict that more than one of the existing aircraft firms will have to close down, at a loss to the Empire which cannot be assessed in intrinsic value, and with the result that many trained expert workers will have to leave the trade of which they have made a speciality and in which they excel. Even apart from the national safety point of view, and placing the matter on the lowest level, the “economy” will be a false one, since the country will in very many cases, be paying a highly-skilled man the dole instead of paying him for doing work of real national importance, whilst the leeway which will have occurred must sooner or later be made good at an ever-increasing cost.

In view of the fact that these things are apt to be forgotten, may we try the patience of our readers by quoting a few figures relating to Britain's post-war air history? Figures are, we realise, generally dry, but in this case they are illuminating. The Air Estimates for 1919–20 showed a maximum establishment at home and abroad of 150,000 officers and men, and the total estimate for the year was £66,500,000.

In the Air Estimates for 1920–21 the number of personnel was reduced from 150,000 to 29,730 and the net estimate from £54,030,850 to £21,056,930. The following year, 1921–22, the personnel voted for was 30,880, and the total net estimate was £18,411,000.

By 1922–23 the “Geddes Axe” had got busy, and the personnel was 31,176. This appears as an increase, but actually during the previous year increases had been made which brought the personnel up to 40,880 instead of the 30,880, so that in point of fact there was a decrease. The most drastic reduction that year was found in the total net estimate, which sank to the relatively very low

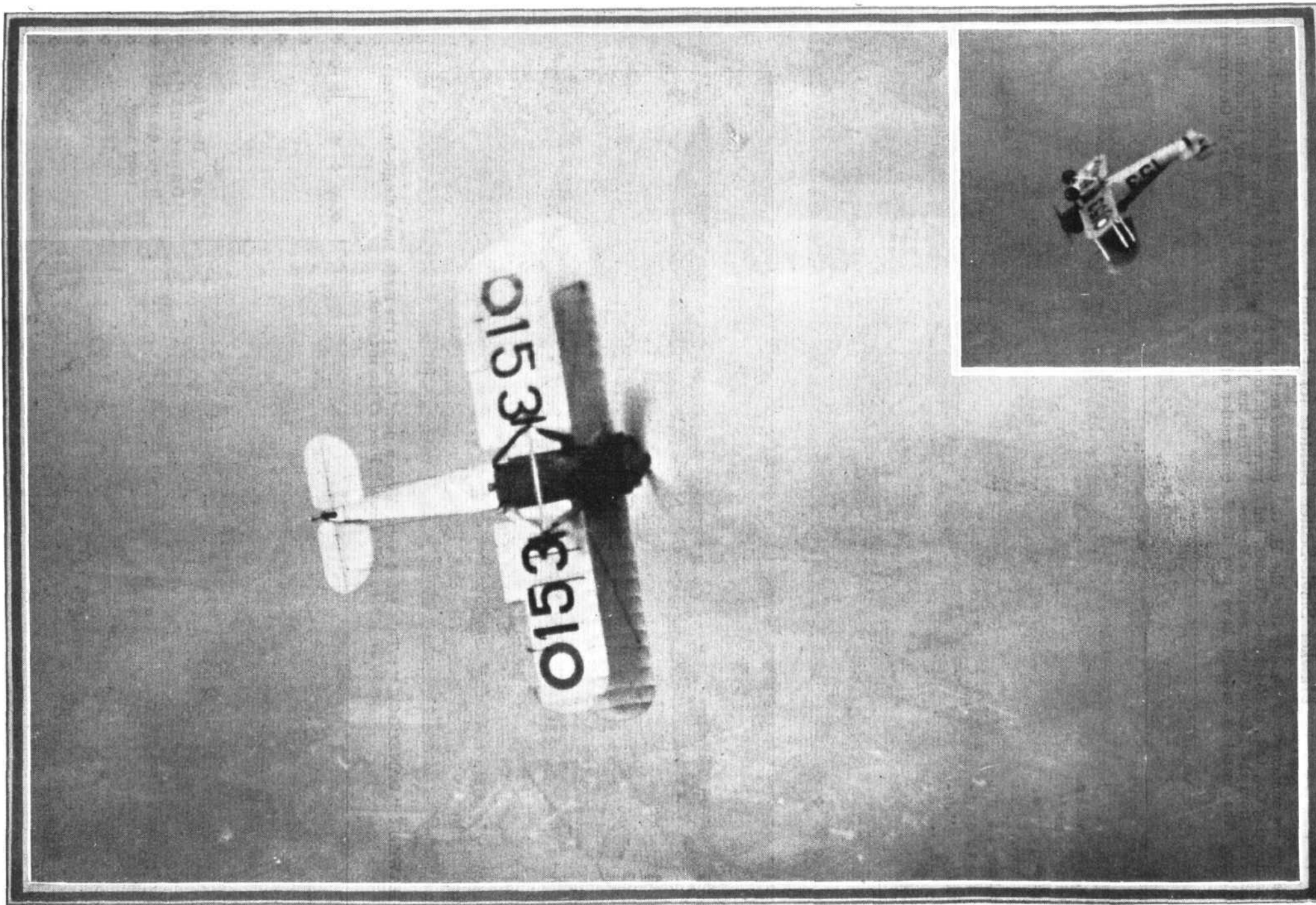
figure of £10,895,000. That year was the low-water mark in the Air Estimates, and from then onwards a steady increase is to be found. Thus in the 1923–24 Estimates we find a personnel of 33,000, and a total net vote of £12,011,000. The 1924–25 Air Estimates were signed by Lord Thomson—in other words, were the Labour Government Estimates—and, in spite of this fact they showed an all-round increase:—Personnel 35,000, and net air vote £14,511,000. By 1925–26 there was an increase in personnel of 1,000, i.e., a total of 36,000, and the net vote had risen to £15,513,000.

The general increase in the Air Estimates during the years following the “Geddes Axe” year are due to a general admission that the air has become our “first line of defence.” This view appears to be shared by all parties, and that being so, and more especially in view of the fact that development in the technical sense is rapid in air matters, it becomes dangerous to attempt “economies.”

What makes the position even more difficult is that it is becoming clear that in the national interest a change in policy is required as regards aircraft construction. Hitherto, as readers of FLIGHT will be well aware, machines have been built in the main of wood. We have no intention here to enter into a discussion of the relative merits of wood and metal from a technical standpoint. But the hard cold fact has to be faced that the world's supply of suitable timber is running very short indeed, and that whether we like it or no, we shall have, if for no other reason, to turn to metal construction in order to ensure supplies in case of emergency. That being so, our aircraft firms will, during the next few years, be faced with the problem of evolving methods of construction in metal which shall be technically effective, and at the same time shall be based upon the use of materials obtainable in time of war. These technical problems are sufficiently serious and difficult in themselves, but if our aircraft firms are to be, in addition, kept on short rations in the matter of orders, then the outlook becomes black indeed.

Briefly summarised, the position may be stated somewhat as follows:—The Air is now the Nation's First Line of Defence. The basis of an effective and efficient air force, capable of expansion in time of need, is a healthy aircraft industry. An aircraft industry, to keep pace with developments abroad, must be adequately supported by the Government, in the form of orders, otherwise it either cannot exist at all, or at best it cannot make the technical progress which the rapid development of aircraft design, the world over, demands. Surely the argument is logical enough in all conscience.

Lest we should be accused of “having an axe to grind,” we publish elsewhere in this issue a leading article from *The Daily Telegraph* of January 19, 1926, in which that newspaper, always eminently sane, well-balanced and unbiased in all matters, especially those relating to the British Empire, and certainly not likely to start unnecessary “scares,” utters a word of warning concerning the slowing up of air development. The views expressed by *The Daily Telegraph* so precisely tally with those put forward in FLIGHT for years that we feel they form a corroboration, from a totally unbiased source, of what FLIGHT has so long been preaching, and we have therefore felt justified in publishing the article in full.



[“Flight” Photographs.]

CONTROLLABILITY: These two photographs of the Hawker “Danecock,” photographed from another aeroplane, show two stages of a “slow roll” carried out by Flight-Lieut. Bulman, the firm’s chief test pilot. In the larger photograph the machine is seen going into a left-hand roll, and the port ailerons can be seen to be in the maximum “up” position. In the inset the machine is on its back and is commencing to dive into a normal position.

AN ANGLO-DANISH ALLIANCE

Hawker Single-Seater Fighters for Denmark

SOME time ago we announced in *FLIGHT* that the H. G. Hawker Engineering Co., Ltd., of Kingston-on-Thames, had received an order from the Danish Government for single-seater fighters. The machines ordered have now been

delivered to the purchasers, and it has consequently become permissible to refer to the history of these machines.

When the Hawker Engineering Company undertook the construction of these machines for the Danish Government

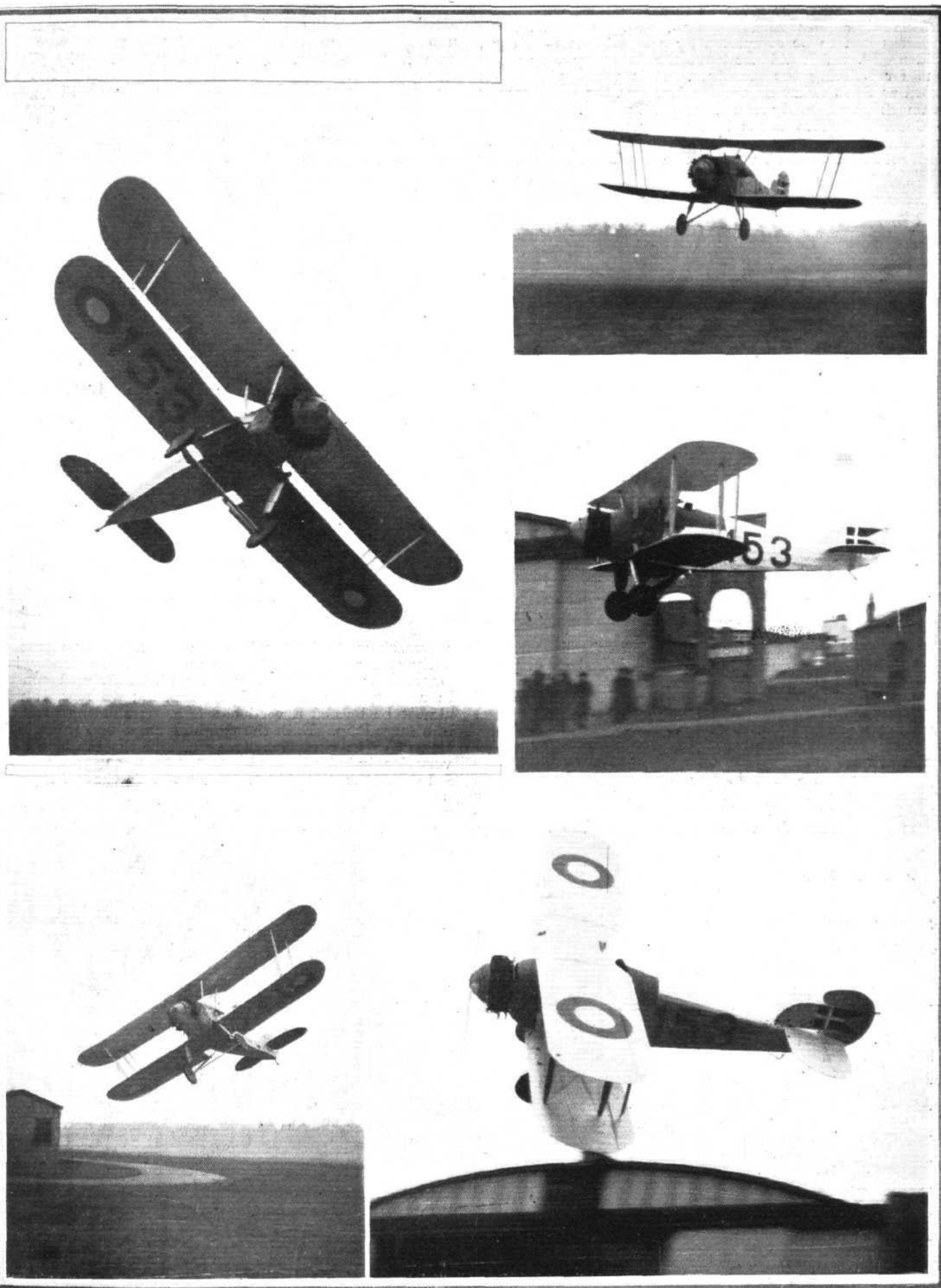
The Hawker
"Danecock":
Three-quarter
front view. The
engine is an
Armstrong-
Siddeley "Ja-
guar."



THE HAWKER "DANECOCK": This front view gives a good idea of the large span single-bay bracing, and the generally "clean" lines of the machine.



The Hawker
"Danecock":
Three-quarter
rear view.



[Flight Photographs]

AN ANGLO-DANISH ALLIANCE: This series of photographs show the Hawker "Danecock" with Armstrong-Siddeley "Jaguar" engine, of which three were recently delivered to the Danish Government. A further number will be built at the Naval dockyards at Copenhagen. These photographs were secured during a test flight at Brooklands recently, and show the machine in a number of various attitudes. The pilot was Flight-Lieut. Bulman. (See also p. 29.)

a guarantee had to be given as to a structural weight and performance figures with full load, and, furthermore, the machines had to be completed by a certain date—a date, incidentally, which did not leave the Company very much time for building the machines. It is worth placing on record as a somewhat uncommon fact that the machines for Denmark were actually tested, accepted, packed and shipped to Copenhagen five weeks before they were due for their first flights. Knowing the difficulties of ever getting aeroplanes finished to time, we think that this achievement by

We had the privilege to be present recently during the carrying out of the acceptance tests of one of the Hawker "Danecoeks," as the machines for Denmark have been named, Flight-Lieut. P. W. S. Bulman being the pilot on this occasion. It is not permissible to give performance figures of the "Danecoek," but it may be said that the all-round performance is very good indeed, and compares not unfavourably with that of the "Woodcock," from which the "Danecoek" has been evolved. In the hands of such an exceptional pilot as Lieut. Bulman, the machine was, of



The Hawker "Danecoek": Side view. Note the Danish flag on the rudder.

the Hawker Engineering Co. is one of which all concerned may well be proud. Incidentally, it might be mentioned that when the machines were finished the structural weight was found to be below the guaranteed figure, in spite of certain increases in equipment, while the performance was considerably in excess of that stipulated in the contract.

Under the agreement entered into with the Danish Government, the latter ordered three machines from the Hawker Engineering Co., and a further batch, the actual size of which we are not permitted to disclose, but which is very considerable, is to be built in the Naval Dockyard at Copenhagen under licence from the Hawker Engineering Company.

course, shown to the very best advantage, and the manoeuvrability and controllability appeared to be extremely good. One of the tests carried out by Lieut. Bulman consisted in a very steep climb off the ground; in fact, it might almost be termed a vertical climb, terminating at the top in a large loop. Both the climbing angle and rate of climb seemed to be exceptionally good, and the machine looped very cleanly indeed.

In another test Lieut. Bulman took the "Danecoek" up to a considerable altitude, and then proceeded to fly at extremely low forward speed. The actual figure is not available, but appeared to be in the neighbourhood of

An Anglo-Dane Alliance: In this group are seen representatives of the Hawker Engineering Company, Armstrong-Siddeley Motors, and the Danish Government. From left to right: Capt. Proctor (Armstrong-Siddeley), Mr. L. A. Pollard (Hawker), Mr. C. V. Thymann (Royal Danish Navy), Mr. H. K. Jones (Hawker), Lieut. P. W. S. Bulman (Hawker), Lieut.-Commander Victor (Royal Danish Navy), and Mr. F. I. Bennett (Hawker).



45 m.p.h. While flying thus slowly, the machine was dropped first on to one wing tip, and then on to the other, showing that even at the stalling speed the lateral control was sufficiently powerful to change from a vertical bank to one side into a vertical bank to the other without the machine ever swerving off its course. When coming in to land, the "Danecock" was seen to float into the aerodrome at a speed which seemed remarkably low for a machine of this type, and after touching the ground, although the undercarriage is not unusually high, the machine seemed to pull up very quickly.

During another flight, on which our photographer went up in another machine, for the purpose of photographing the "Danecock" in and from the air. Lieut. Bulman executed some extraordinarily slow rolls, one of which is illustrated in a full-page photograph. We do not recollect ever having seen rolls carried out better than they were on this occasion, and certainly the Hawker "Danecock" appears to possess a large degree of both manoeuvrability and controllability.

Concerning the "Danecock" itself, it is not, unfortunately, possible to say very much, but it may be stated that the machine is a development of the well-known Hawker "Woodcock" supplied to the Royal Air Force. Those familiar with the "Woodcock" will note from the accompanying photographs that a change which is immediately noticeable is the shortening of the bottom plane. The arrangement in this respect is more reminiscent of the Hawker "Heron," although the normal chord of the bottom plane has been retained in the "Danecock." The view from the pilot's cockpit is very good, although probably the relatively large

chord of the bottom plane causes a good deal more blanketing than does the small chord of the lower plane in the "Heron."

It is interesting to note that the equipment of this machine is to be almost entirely British, this referring to the armament, electric plant and the majority of the instruments carried, while a few additional "gadgets" of Danish make are to be fitted when the machines are put into service in Denmark.

The engine fitted in the Hawker "Danecock" is an Armstrong-Siddeley Jaguar, which firm thus shares with the Hawker Company the credit of introducing British service aircraft into Denmark. Hitherto the Danish Government has been purchasing its aircraft equipment mostly from countries other than Great Britain, mainly, we believe, for financial reasons, but although British aircraft may be somewhat more expensive in first cost, there is little doubt that the soundness of British design and workmanship will soon outweigh this slight disadvantage, and we are quite sure that in the case of the Hawker "Danecock" with its Armstrong-Siddeley Jaguar engine, the Danish authorities will possess a single-seater fighter with a performance equal to that of the best equivalent types of other and much larger nations. At the moment it is, of course, impossible to foresee how the Danish-built machines will compare with the original British prototype, but provided the right materials can be obtained (and we believe the greater part will be obtained from this country), and the Danish workmen trained to the same degree of craftsmanship as obtains in this country, the Danish Air Service should soon be in possession of a fleet of machines which may well cause envy among the service aviators of neighbouring countries.

■ ■ ■ ■

AVIATION IN IRELAND

Formation of Aero Club

THE recent visit of Gen. Sir Sefton Brancker to Ireland has already borne fruit. The very least that may be said regarding his visit is that it has stimulated extraordinary interest in the possibilities of aviation for utilisation in commercial circles. There can be no doubt whatsoever that the development of aviation in Ireland would cause a general and much-needed impetus to vibrate throughout a country placed in an exceptionally fine geographical position for the economic and advantageous operation of aircraft.

At a meeting of Dublin citizens interested in aviation, held recently in the Shelbourne Hotel, Dublin, the inception of the Irish Free State Aeroplane Club took place. It was mentioned that British aeroplane manufacturers were prepared to give most advantageous terms to such a club in regard to the purchase of machines.

A temporary committee was formed to carry out the decisions taken at the meeting.

Maj. Bryan Cooper, C.B.E., presided, and there was an exhaustive discussion of the various aspects of civil aviation as it affects Ireland, which has hitherto shown little interest in the subject—the progress of aviation in England in recent years, the advantages derived from the establishment of an Aero Club to foster and cultivate the "flying spirit," resulting in the formation of so many light 'plane clubs, whose membership consists of people of all classes who realised the great future of aviation.

In Northern Ireland there are two light 'plane clubs, but up to the present the Free State has had no organised

body to conduct or promote the development of aerial traffic, and yet Ireland, of all countries, presented with her unique geographical position, natural harbours and landing-places, enjoys almost ideal conditions for aerial traffic. It may also be mentioned that aerodromes are spotted all over the country, having been erected during the Great War, three of those being on the outskirts of the capital.

It was, one speaker said, an anomaly that the Free State, a remarkable transatlantic port, should be lacking an organised body to develop the country's potentialities in this respect. A note upon which stress was laid by all the speakers was that Ireland's commerce will be assisted and her business accelerated by the growth and development of civil aviation.

At the close of the inaugural meeting (to which, unfortunately, the Press were not invited) and after the discussion, the Club was formed, and a temporary committee appointed with Mr. E. J. Macredy as hon. secretary. The subscription was fixed at £3 3s. per annum.

The Governor-General, Mr. T. M. Healy, K.C., has signified his intention of supporting the Club, and there can be little doubt that he will be first patron. It was at the Governor-General's residence, the Vice-Regal Lodge, Phoenix Park, that Sir Sefton Brancker stayed during his short visit, and he, no doubt, urged the formation of the club.

Maj. Bryan Cooper, C.B.E., who served with distinction in the Great War, is both capable and energetic, and with his assistance the future of the Club is secure.



London-Cape Town Survey Flight.

ENORMOUS crowds of natives—some of whom had trekked many miles to see for the first time an aeroplane fly—gathered at Jinja when Alan Cobham, with Elliott and Emmott, resumed the London-Cape Town Flight on January 13. With a few preliminary stunts and circuits on the D.H. 50 J (Siddeley "Jaguar") just to show the natives the qualities of the white man's latest "magic," Cobham flew on some 50 miles to Kampala, where some more aerial magic was given out for the benefit of those watching below. Without landing, Cobham then flew along the shores of Lake Victoria Nyanza to Kisumu, Kenya Colony. Here they were received by the Senior Commissioner and scores of highly excited and enthusiastic natives. Before leaving Kisumu on January 18, they took some films and photographs of the port, which is the highest one in the world, being nearly 4,000 ft. above sea level. No difficulty was experienced in

"taking off," and after a flight of 400 miles they arrived at Tabora in Tanganyika.

London-Paris Night Air Service

THE experimental night air service between London and Paris, which was to have been started by Imperial Airways on January 15, has been postponed, as the special wireless and other accessories being fitted to the Vickers-Rolls-Royce air liner, which was to carry out the experiment, have not yet been completed.

An Aviator-Governor-General

It may be of interest to record that Lord Stonehaven (formerly Sir James Baird), the Governor-General of Australia, owns and flies an aeroplane for the purpose of fulfilling all distant official engagements. Lord Stonehaven is a firm believer in aircraft, and states that Australia offers great possibilities for commercial aviation.

SECURITY IN THE AIR

In connection with our Editorial Comment this week we publish below a leading article from our esteemed contemporary *The Daily Telegraph*, of January 19, 1926, in which the subject of security in the air and the reported slowing up of air development are dealt with in the fair and unbiased manner so characteristic of that newspaper. Thus *The Daily Telegraph* :—

"The Estimates for the financial year 1926-1927 are now under consideration, and the outcome is of exceptional concern to the public because of the need, and yet the admitted difficulty, of balancing a reduction of expenditure with the maintenance of national security. This difficulty is due largely to the fact that the economies now sought are but the latest of a series, after each of which the responsible Ministers and their advisers have declared that the Forces were reduced to the minimum compatible with security. To scrape the bones of a skeleton cannot be expected to produce much result. In such a case a Government is confronted with three possible courses; to abandon hope of any large savings; to investigate the completeness of the past 'cuts' and the possibility that their thoroughness may have been exaggerated; to reconstruct the skeleton on a different scale or model. The appointment of the Colwyn Committee on Expenditure was an attempt to follow the second alternative. If report be true, the savings proposed, while helpful, do not amount to a large sum. Report also suggests that the reduction on the forthcoming Navy and Army Estimates will only bear a small proportion to the total. On the other hand, the Air Minister, in a speech on December 16, forecast very considerable savings in his Department by postponing heavy expenditure that had been planned. 'In the normal course of things the Air Estimates would rise next year by some 30 per cent, as an automatic result of the policy of expansion that has been approved by successive Governments and sanctioned by the House of Commons. This heavy rise, which would have brought the Air Estimates to a sum well over £20,000,000, as compared with the £16,000,000 of this year, would have been most unfortunate at a time when the whole world is thinking of peace, and when every British taxpayer is clamouring for a reduction of Government expenditure.' On the face of it, such a large saving by mere postponement appears the rational course, and, moreover, an ideal way to counterbalance the difficulty of administrative economies in the other Services. Yet is it really anything more than the easy and time-honoured method of avoiding problems rather than facing them?"

"The impression current is that we are to mark time for two, if not three, years in the development of the air programme that, in 1923, was adopted as the minimum necessary for the defence of the country against air attack. The potentialities of aircraft as a weapon against the civil population and the defenceless state of this country were alike realised in that year, and a public outcry arose. On June 26 the Prime Minister, Mr. Baldwin, made a statement in the House of Commons, setting forth the principle on which British

air policy was to be based—'A Home Defence of sufficient strength adequately to protect us against air attack by the strongest Air Force within striking distance of this country.' Subsequently, Sir Samuel Hoare announced that it had been decided to create with as little delay as possible a Home Defence force of fifty-two squadrons, so organised as to make further expansion possible if found necessary. These fifty-two squadrons were thus the accepted minimum, for defence not offence, and it was generally understood that the expansion was to be completed in about five years. In 1924 the Labour Government declared its adhesion to this policy, and in March, 1925, with a return of the Conservative Government, the principle was reiterated. Successive Governments of opposing politics have thus endorsed and confirmed both the policy and the principle on which it was based. Are there adequate reasons for throwing it overboard? Those suggested are, apparently, Locarno and the need for economy. The cry for economy was as strong in 1923 as in 1926, yet the Government who were making much heavier cuts than to-day in other services initiated this additional item as essential. After the war, we cut down our magnificent Air Force to a fragment, but no Continental Power followed our example, nor has there been any suggestion of such action since the signing of the Treaty of Locarno. The French have some 140 squadrons, practically all at home, the Italians are well on the way to a force of 100 squadrons. Our Home Defence expansion has only reached a total of twenty Regular and five Special Reserve or auxiliary squadrons.

"To the public, the taxpayers, who realise the probability that they will be the first target at the outset of another war, there is little consolation in knowing that we have a superbly trained air personnel on the ground, but few machines in the air. The consequences of the proposed 'cut' were indicated in the report of the annual meeting of the Rolls-Royce Co. 'The result of any important curtailment of the Air Ministry programme for new aeroplanes and engines must necessarily involve the discharge of a considerable number of workmen who were experienced experts and could not be replaced. This must place the British Empire in a position of danger. Obviously engine-designers could not spend their time and money in bringing out new aero-engines unless they were in receipt of sufficient orders to justify such expenditure.' The Air Force relies on private enterprise for its machines, and as a result the aircraft industry forms as essential a pivot of the scheme of national defence as any combatant part. Further, no other arm is developing so rapidly, nor finds its instruments obsolete so soon, and thus, as Maj. Turner pointed out in these columns yesterday, the progress of design is as vital as the supply of material. If orders are suspended for two or three years, not only must factories be closed down, but experiment also will be cramped, for no firm can afford it, nor will they have any prospect to offer to the engineering brains of the country. Such a policy is even immediately extravagant, for the smaller the orders the higher must be the cost per unit, engine, or machine."



BRISTOLS IN GERMANY : This photograph shows a school machine, fitted with Bristol "Lucifer" engine built by the ARADO Handels Gesellschaft m.b.H., of Warnemunde. The wing bracing is somewhat unusual.

The aircraft industry, after almost collapsing after the war, has been built up again—without the lavish subsidies given by foreign Governments—because it was assured of a continuous and clearly-defined air policy. If this sure support is to be removed, the country at least should be warned of the dangers—not only the prolongation of our defencelessness in the air, but the hopelessness of attempting any expansion in an emergency if the foundation is destroyed. Marshal Foch has lent his authority to the view that future wars may be decided by air attack on the civil population and

centres of industry, and if this be even a possibility it is essential to guarantee their defence as a first charge before meeting the requirements of the other Services. Their rôle, however important, are secondary in point of time when war breaks out. To reconcile economy with security it would seem essential, not merely to review expenditure, but to review the military values of the various Services under modern conditions, as a step to reconstruction of our scheme of defence and a readjustment of the proportionate expenditure."

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication must in all cases accompany letters intended for insertion in these columns.

AIRSHIPS IN WAR

[2112] A wordy warfare between author and critic is usually amusing, and therefore I crave a little space for an attempt to add to the gaiety of nations. In his letter which appeared in your issue of January 7, Major Oliver Stewart writes: "If the British Navy can forbid the surface of the sea to hostile carriers, which implies hostile warships (including submarines) it *must be able to forbid it to raiders and to ensure the safety of the trade routes.*" The italics are mine.

This argument is a fallacy of the class known to logicians as *non sequitur*. The ability to forbid the surface of the sea to hostile carriers and all that that term implies (the use of the word "surface" rules out submarines), by no means involves the ability to forbid it to raiders. In the late war the British Navy did forbid the surface of the sea to the enemy's main fleets; but a few isolated raiders and one small squadron (the Scharnhorst, Gneisenau and Co.) managed to escape on to the high seas. The same thing is quite likely to happen in future wars. It is an easy matter for the mistress of the seas to arrange for the destruction of the raiders once they have been located; but delay in locating them is expensive in the matter of merchant shipping. The use of airships will be the quickest way of locating the raiders.

In his next paragraph Major Stewart writes: "The British Navy can prevent hostile ships from approaching the scenes of operations; therefore, the British Navy requires airships to prevent hostile ships from approaching the scenes of operations. Read that through quickly three times and its force may become clear."

I have read it through more than three times, both quickly and slowly, and its force has not yet become clear to what I call my intelligence. Perhaps I am not able to read fast enough. If hostile ships do not approach scenes of operations,

then what operations, may I ask, take place on those scenes? Raiders certainly do not want to approach the scenes of any operations except their own.

There, Major Stewart, is my Roland for your Oliver.

F. A. DE V. ROBERTSON

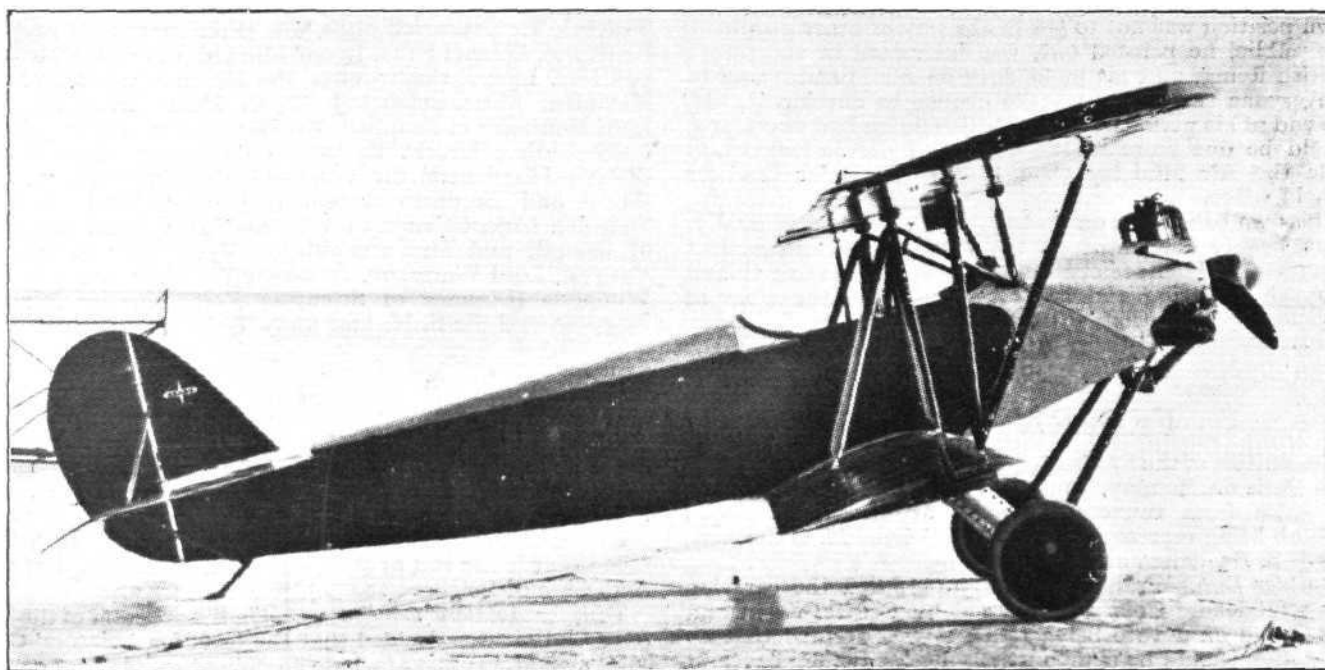
Hampstead, January 8.

THE NEW SUBSIDY BASIS

[2113] An undesirable feature of the new subsidy arrangements with Imperial Airways, which you have not (I think) touched on, is the premium placed on high engine-power. Maj. Turner has calculated that on a flight between London and Amsterdam a Vickers "Vanguard," with 1,200 h.p. carrying about 4,000 lb. commercial load, will on the new basis earn £73 8s. subsidy, while a 240 horse-powered D.H. 50 carrying 930 lb. commercial load will only earn £14 12s. subsidy. On these figures the twin-engined machine carries 3.3 lb. commercial load per horse-power, compared with 3.9 lb. carried by the D.H. 50. In other words, the "Vanguard," with only 84.6 per cent. of the "commercial efficiency" of the D.H. 50, has exactly five times the subsidy-earning capacity. Whatever advantage this system may have for Imperial Airways, it cannot but be detrimental to the development of the aeroplane as a commercially paying proposition and seems calculated to encourage inefficiency. We appear to be drifting back to the War days, when the aeroplane was "developed" simply by cramming on more horse-power. The policy of two of the leading light-aeroplane engine firms in increasing the horse-power of their engines from about 24 h.p. to 35 h.p. seems to point to the same tendency.

W. LOCKWOOD MARCH, Lieut.-Col.

January 17, 1926



Side view of the ARADO A.R.S.1 with Bristol "Lucifer" engine.

THE ROYAL AERONAUTICAL SOCIETY'S SIXTIETH ANNIVERSARY

LAST week, on Tuesday evening, January 12, the Royal Aeronautical Society held a conversazione in the Aeronautical Section of the Imperial College of Science, to celebrate the sixtieth anniversary of the foundation of the society. A large number of guests, well known in the world of aeronautics, were present, including Sir Samuel Hoare, Secretary of State for Air, Prince Chichibu of Japan, and Foreign Air Attachés. They were received by Air Vice-Marshal Sir Sefton Brancker, Director of Civil Aviation and Chairman of the Council of the Society.

The guests spent a very pleasant time inspecting the many interesting and historic aeronautical exhibits which have their home in the museum, as well as an additional collection of early aeronautical books, prints, manuscripts and early records of the society, all of which are usually housed at the Society's headquarters in Albemarle Street. From these early records of the Society one was able to follow its development, from its inauguration at a meeting held at Argyll Lodge with the Duke of Argyll in the chair on January 12, 1866, up to its present position of being the foremost as well as the oldest aeronautical society in the world.

In the space at our disposal it would be impossible to enumerate all the interesting exhibits which were to be seen on the occasion of last week's gathering, but among the more important links with the past we may mention the following. A model of Montgolfier's hot-air balloon and various relics of famous early balloons, accounts or illustrations of their ascents, gave an insight to the early work of the society which was then mainly devoted to ballooning. Then, for a later period, various items connected with the heavier-than-air side, such as a model of Stringfellow's steam-driven aeroplane, and later still the actual triplane on which Mr. A. V. Roe—the first Englishman to fly—made his first attempts on Lea Marshes.

Among the modern exhibits illustrating the progress of aeronautics was the Reid indicator for testing the "flying aptitude" of pilots, by means of which it is possible to ascertain, graphically, whether a pilot has (a) "good hands" for manipulating the joy-stick; (b) "good feet" for the rudder bar; (c) can at a moment's notice quickly and evenly perform the combined movements of hand and feet.

In welcoming the guests Sir Sefton Brancker said he thought that Sir Samuel Hoare was the best Air Minister this country had ever had. His work in connection with the technical and civil sides of British aviation would bear fruit for years to come. He added that the society was particularly indebted to Sir Samuel for the assistance, to the extent of £250 a year for five years, granted by the Government—a sum which had actually saved the society from going out of existence.

In responding, Sir Samuel Hoare said that he had always thought that the most important matter in connection with his own position was not to get in the way of other people.

The public, he pointed out, was interested in the future of British flying, and his main duty as Air Minister was to give everyone the freest possible chance to develop it. If, at the end of his period of office, British flying had developed, it would be due more to the energy of people inside and outside the Air Ministry than to the particular Minister who held office.

On his own behalf and on that of the Government generally, he was keenly interested in the anniversary and wished to congratulate the society on the invaluable work it had accomplished during the last 60 years. At the time of the society's formation scarcely anyone believed in the future of aviation outside the membership, and even the

press was, with the exception of John Delane, the editor of the *Times*, extremely sceptical of the new development.

It was the Aeronautical Society, now the Royal Aeronautical Society, which kept the lamp of progress alight and year by year provided the opportunity, as its records of papers read showed, of discussing almost every problem of flying. Great as the record of the past 60 years had been, he hoped the most useful period of the society's activities had yet to come. He understood from Sir Sefton Brancker that the society was about to extend its activities. It was contemplating the introduction of associate members, men and, he hoped, women, who would not only be scientists, but actually engaged in the daily work of flying. It also contemplated awarding its gold medal to some distinguished aeronautical pioneer. That medal was seldom given, and the names of those who held it showed how great were their services.

The new programme entailed greater financial support than that received during the past few years, and it was satisfactory to note that more than one benefactor had already come forward. He was told that Mr. Scott Paine, had already offered a subscription of £50 a year, and Lord Cowdray, who had rendered innumerable services to British flying, had promised another £50 a year if nine others would follow his example. He sincerely hoped that those nine people would come forward, for one of the difficulties of British aviation had been the extent to which it had hitherto been dependent on the activities of one Government Department. Concluding, Sir Samuel said the Society was a splendid centre for increasing the interest of British citizens in flying, and bringing into the common pool of aviation development more brains and capacity than we could hope to have if they were restricted to the exertions of a Government department.

A short but extremely interesting history of the Society, with special reference to its work during the Great War, was given by Mr. J. E. Hodgson, the Hon. Librarian.

Among those present were:

H.I.H. Prince Chichibu, the Brazilian Ambassador, the Japanese Ambassador, the Swedish Minister, the Swiss Minister, Prince N. M. Arasteh (Persian Chargé d'Affaires), Major B. F. S. Baden-Powell, Professor L. Bairstow, Sir Geoffrey and Lady Butler, Mr. A. Stewart Buckle (president, Society of Engineers), Sir T. A. Coghlan (Agent-General for New South Wales), Sir Joseph Cook (Australian High Commissioner), and Lady Cook, Major H. C. Davidson (U.S. Air Attaché), Sir Fortescue Flannery, Lieut.-Colonel I. A. E. Edwards (Deputy Director of Air Transport), Lord and Lady Gorell, Mr. C. Shirreff Hilton (Deputy Chairman, Air League of the British Empire), the Hon. James Huxham (High Commissioner for Queensland), Mr. J. Howard (Agent-General for Nova Scotia), Sir Samuel and Lady Instone, Colonel Sir Joseph Nall (President, Institute of Transport), Mr. J. S. K. Inskip (President, Cambridge University Aeronautical Society), Sir Frederick Mills, Bt. (President, Iron and Steel Institute), Colonel H. G. Lyons (director of Science Museum), and Mrs. Lyons, Commander the Marquis and Marchioness Komatsu, Lieut.-Colonel J. T. C. Moore-Brabazon, M.P., Lord Montague of Beaulieu, Mr. Handley Page, Sir John and Lady Ridley, Mr. P. F. Rowell (Secretary, Institution of Electrical Engineers), Sir John and Lady Salmond, Commander Baron and Baroness Sanejima, Lieut.-Colonel R. Eccles Snowden (Agent-General for Tasmania), Colonel the Master of Sempill and Mrs. Sempill, Sir Vyell Vyvyan and Lady Vyvyan, Lord Wargrave, Professor W. W. Watts, Mr. H. E. Wimperis (Director of Scientific Research, Air Ministry), Brig.-General Sir S. H. and Lady Wilson, and Mr. T. O. M. Sopwith.

FEDERATION AERONAUTIQUE INTERNATIONALE

THE Committee of the Fédération Aéronautique Internationale met in Paris on Monday, January 11, 1926.

Delegates from thirteen countries attended, the Royal Aero Club being represented by Lieut.-Colonel M. O'Gorman, Major J. S. Buchanan and H. E. Perrin.

Schneider Cup.—France and Italy proposed the carrying of a useful load. This was opposed by Great Britain and America and on a vote being taken it was decided that no modification should be made in the rules for the next race.

The question of the date, which has been fixed for October 24, 1926, was discussed at some length. It was decided that

the F.A.I. would raise no objection to the Royal Aero Club forwarding a request to America to postpone the date to 1927.

Gordon-Bennett Balloon Race.—It was decided to hold the race towards the end of May, the exact date being left to the Aero Club of Belgium, the holders.

Tests for Aviators' Certificates.—On the proposal of the Royal Aero Club, it was decided that the tests for Aviators' Certificates should no longer include an obligatory flight of one hour at an altitude of 6,000 ft. The height of 6,000 ft, however, must be attained.

AN AIR-COOLED LIBERTY ENGINE

In the December issue of our American contemporary, *The Slipstream*, there is published a brief account, by Hobert L. Wilson, of an interesting experiment carried out by the Engineering Division of the U.S. Air Service at McCook Field, viz., converting the Liberty engine from a water-cooled into an air-cooled. As this engine is not unknown to many of our readers on this side of the Atlantic we quote the article in question below for their benefit.

There are some thousands of the standard Liberty 12 water-cooled engines in war surplus stocks. These engines have been constantly modified since their construction to bring them up to date. The reliability of the engines is a well-known factor, as evidenced by their successful performance on numerous duration and distance flights, including the Round-the-World Flight. But it remained for the Engineering Division of the U.S. Air Service (McCook Field) to air-cool these engines, thus continuing their life as up-to-date equipment.

The previous development in America of air-cooled engines had been limited to radial engines because of the ease of securing uniform cooling with this arrangement. The air-cooled V-type, however, had its advantages, foremost of which was a decrease in frontal areas—3.1 sq. ft. compared

engine is approximately the same as that of the water-cooled engine, but with the propeller turning at a higher r.p.m., the fuel consumption remains practically the same.

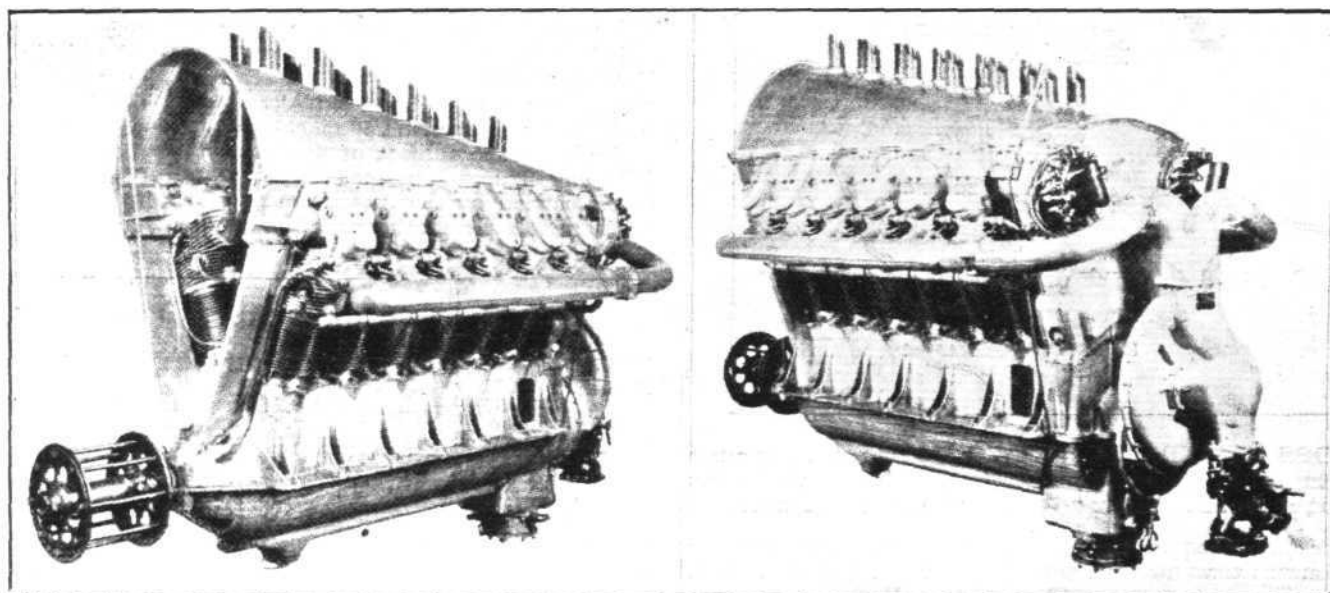
In addition to the decrease in frontal area, particularly on the inverted engine, which permits of a narrow streamline nose cowl, the saving in weight of the air-cooled engine installation over the water-cooled engine installation is considerable as is noted below in the case of the X-CO.6 aeroplane.

The first production model of the air-cooled Liberty engine was installed in the X-CO.6 observation machine and given a flight test. After a few preliminary flights, the machine was flown across country from Dayton to Mitchel Field, Long Island, where it competed in the race for observation planes, and was a leading contender in this race until forced down in the last lap by a stoppage in the fuel supply.

The advantages of the inverted air-cooled Liberty engine, installed in an aeroplane as in the case of the X-CO.6 are as follows:—

1. Improved Flying Qualities—

- (a) Reduction of Weight. Weight saved, 141 lbs.
- (b) Lower frontal area and improved streamline shape due to absence of radiator.



AN AIR-COOLED LIBERTY ENGINE : Two views of the Liberty 12 aero engine converted from water-cooled to air-cooled by the Engineering Division, U.S.A. Army Air Service, at McCook Field.

with 8.7 sq. ft. for the nose radiator of the D.H.-4 aeroplane with a water-cooled engine.

The air-cooling of the Liberty engine consisted in the design, construction and test, of air-cooled cylinders assembled on a standard Liberty 12 engine, using overhead camshafts, and a rotary induction system. The new parts consist of a $4\frac{1}{2}$ in. diameter piston, its pin, the bushing for the small end of the connecting rod, a cylinder, suitable cowls to catch the air from the propeller and lead it down the Vee to escape between the cylinders, camshaft and housing, and a special wiring manifold.

The cylinder construction is a modification of the Engineering Division Type "J" cylinder which is the basis of all successful, large, air-cooled engines in America. It consists of an aluminium head, screwed and shrunk on a steel barrel, and further held by a steel clamp ring shrunk over the base of the head. The exhaust valves are salt-cooled, and the exhaust is inside the Vee to bring the coolest air over the hottest part of the cylinder head.

Additional modifications of the standard Liberty engine are steel backed bearings for the connecting rods, omission of water pump and the replacement of the oil pump by a special large volume unit. The horse-power of the Liberty air-cooled

- (c) Improved vision due to narrow lines possible around upper portion of nose, while maintaining the thrust line at a desirable height with respect to the centre of gravity of the machine.
- (d) Reduced noise, exhaust stacks low, cleaner to fly, free from oil and carbon.
- (e) Reduced vibration in aeroplane structure because of the use of the rotary induction system which makes the engine run very smoothly.
- (f) Independent of extremes of hot or cold weather and altitude.

2. Reduction of First Cost and Maintenance Cost—

- (a) Simpler engine installation.
- (b) More accessible, cowling lighter, easier to make, to remove and to put on. Valve gear, sparking plugs and carburettor can be reached without climbing on machine, or using a ladder.
- (c) Fuel and oil consumption equal to that of most water-cooled engines.
- (d) Elimination of cooling system with hazards of leaks and freezing and its vulnerability to gun-fire in the case of a military machine.

Oslo-Spitzbergen Flight

On January 9 Lieut. Eliassen, accompanied by Dr. Gross, left Oslo in a flying-boat, with the object of flying to Spitzbergen. A snowstorm forced them to descend at Sjoa (175 miles from Oslo), but they resumed their journey on

January 11, only to find after 1½ hours that they had gone out of their course. A landing was made at Lesje, and eventually they reached Aandalsnes, where they thoroughly overhauled the machine. On January 16 they set out again for Spitzbergen.

ACROSS AUSTRALIA IN TWO DAYS

Col. Brinsmead's Fine Performance in a D.H. 50

WE have just received some brief particulars of a fine flight across Australia and back carried out by Col. Brinsmead, the Controller of Civil Aviation to the Commonwealth Government. The object of the flight was to inspect the air route between Charleville and Cloncurry and to survey a proposed extension of this service northward to Normanton. The outstanding feature of this flight may be said to consist of the fact that the return journey from North to South Australia

packing case—during the summer of 1924. The pilot of the machine was Capt. E. J. Jones, M.C., A.F.C., who has accompanied the Controller on all his long flights, and Mr. O. H. Howard accompanied the expedition as engineer.

The first stage of the journey, carried out on December 1 last, was one of 850 miles from Melbourne to Charleville, the southern terminus of the Queensland and Northern Territories Aerial Services route (Charleville-Camoo-weal). On the next day the flight was continued another 370 miles to Longreach, the Q.A.N.T.A.S. headquarters, when discussions with Mr. Hudson Fysh, the managing director, occupied the following day, December 3.

Proceeding on December 4 they got as far as McKinlay, a station 240 miles north-west of Longreach, where they spent the night. The last stage of the outward journey to Normanton, via Cloncurry (the present northern terminus of the route) was covered on December 5.

The homeward journey, which is tersely described in the report of the flight as "uneventful," was made in two days—810 miles from Normanton to Charleville being flown on December 6 and on the following day 850 miles from Charleville to Melbourne, bringing the total mileage to 3,320, which was completed in 37 hours 25 min. flying time.

It is of interest to note that the Queensland and Northern Territory Aerial Service Co. has acquired the manufacturing rights from the de Havilland Aircraft Co., entitling them to build under licence D.H.50 machines for use on their services.

While on the subject of flying in Australia, perhaps the following figures (obtained from the Air Ministry) of the traffic carried by the Australian air lines during the month of August last and the period from January to August of last year, may be of interest:—



ACROSS AUSTRALIA IN TWO DAYS: Sketch map showing the route taken by Col. Brinsmead in his flight from Melbourne to Normanton and back

was accomplished in two days—a journey, which by any other means than aircraft, would occupy not less than three weeks. The section from Cloncurry to Normanton alone, under existing conditions, involves, we understand, about a fortnight's travelling, since there is no direct route between the two places.

Col. Brinsmead used the same de Havilland type 50 biplane, with 240 h.p. Siddeley "Puma" engine, in which he made the 7,000 miles circuit of Australia in 22 days—immediately after the machine had been taken from its

Route	Period 1925	Machine Mileage	Paying Passengers	Letters Carried	Goods Carried lbs.
Perth-Derby* (1,442 miles)	Aug. ... Jan.-Aug.	12,861 105,723	102 631	22,911 145,018	973 4,809
Charleville-Camoo-weal* (825 miles)	Aug. ... Jan.-Aug.	7,673 55,261	78 761	1,939 11,886	945 7,504
Adelaide-Cootamundra* (578 miles)	July 21-Aug. 31	18,286	26	1,872	—
Broken Hill-Mildura† (189 miles)					
Melbourne-Hay† (233 miles)					
Total all routes ...	Jan.-Aug.	179,270	1,418	158,776	12,313

* Weekly in each direction.

† Twice weekly in each direction.

D.H.50 machines are also employed on the Adelaide-Cootamundra, etc., services, which are operated by the Larkin Aircraft Supply Co., Ltd.

LIGHT 'PLANE CLUB DOINGS

London Aeroplane Club

THE fog during the week has curtailed the flying and with only one machine available the flying time was 7 hours 55 minutes.

The following members had flying instruction:—R. C. Brighton, R. L. Preston, Mrs. Atkey, R. V. Banks, W. Hay, G. Wallcousins, G. Quirk, D. Kittell, N. Jones, A. P. Hunt, V. H. Doree, A. R. Ogston.

Solo flights were made by Mrs. Elliott-Lynn, G. N. Warwick, and G. H. Craig. The accident to G-EBLU has turned out a serious matter, as it means practically a complete write-off of the aeroplane. Immediate steps are being taken to replace the machine.

The inaugural dance of the London Aeroplane Club was held at the Suffolk galleries on January 13, under the patronage of Sir Philip Sassoon. The profits from this dance were to be devoted to the furnishing of a club room at the aerodrome, but the Committee decided that as it was more important to make it a success as a social function than as a financial undertaking all efforts were accordingly made in that direction.

Among the 200 present were strong representations from the R.A.F. The Army, the Navy, the Air Ministry, the Royal Aero Club, the Air League, the Aircraft Industry, the Press, and the other light aeroplane clubs.

A substantial amount of money was realised, details of which can be obtained from the Hon. Secretary, Dance Committee, and to which it is hoped numerous contributions will be added.

During the evening Mr. Santos Casani, an old R.F.C. pilot, and Miss Josi Lennard performed some graceful exhibition dances.

The Lancashire Aero Club

FLYING took place on Wednesday, Friday, Saturday and Sunday, except for Wednesday hard frost and mist have prevailed. Mr. Cantrill and Mr.

Scholes gave dual instruction to: H. Hardy, 1 hour 45 mins.; A. Goodyear, 35 mins.; W. Colley, 1 hour 5 mins.; D. Tummers, 35 mins.; H. Stern, 35 mins.; P. Michelson, 20 mins.; A. Parker, 35 mins.; J. Leeming, 1 hour 5 mins.; S. Crabtree, 40 mins.; R. Williams, 25 mins.; M. Lacayo, 35 mins. Solo flights of 45 mins. by J. Cantrill.

Total dual 8 hours 15 mins., tests occupied 45 mins. Total time flown, 9 hours 45 mins.

The enthusiasts who use the L.P.W. will be glad to hear a new engine has arrived and is to be fitted shortly. This will drive the "Prop" direct without gearing. It is proposed to raise the engine and to take 4 in. off the height of the front skid. At present the skid is inclined to "dig in" if the tail is too high. The optimists predict that the new engine will be easy to start, and Mr. Dyson is confident of higher speeds—even uphill.

The Newcastle-upon-Tyne Aero Club

FLYING report for week ending Sunday, January 17, 1926:—The weather has been unfavourable throughout the week, with snow and fog almost every day. No flying was possible on Tuesday or Thursday.

On Wednesday both Mr. W. M. MacKain and Mr. W. T. Walton carried out the figure of eight tests for their licences, each flying for half-an-hour, but there was never any possibility of them attempting the height tests on account of bad visibility.

On the same day, L.Y. "Bernicia" proceeded to her birth-place, Stag Lane, per the Tyne-Tees steamer *Bernicia*. The latter looked more stately than ever as she proceeded down the river, and appeared to be inwardly rather proud of her part in, for a time, removing her rival in the transport business of the district.

Mrs. R. N. Thompson and Mrs. J. A. Somerville (honorary members) each

had 15-minute flights with Major Packman on Saturday, and on Monday Miss Parkin had a 7-minute joy-ride.

Mr. P. Forsyth Heppell took Mr. F. C. Bulman for a 30-minute flight on Saturday. Mr. R. N. Thompson had a 30-minute solo flight.

On Sunday Mr. N. S. Todd flew for half-an-hour with Mr. G. H. Twine as passenger. Mr. Twine had expressed a wish to have a real joy-ride, as, during his dual instructional flights, he is always too busy with his training to be able to study the countryside. Mr. Thompson made two solo flights totalling one hour on Sunday.

The following members had secondary dual instruction under Major Packman during the week:—

Mr. MacKay (50 mins.), Mr. Walton (30 mins.), Mr. Irving (1 hr. 18 mins.).

Dual instruction flights were as follows:—

Mr. A. E. George (30 mins.). Skating takes up Mr. George's leisure, and very little is seen of him while the ice lasts, and this accounts for the small amount of flying he has put in since the real winter began. Miss C. R. Leathart (65 mins., two flights), Mr. Twine (38 mins.), Mr. C. G. Bates (15 mins.),

Mr. Somerville (2 hrs. 15 mins.), Mr. L. Smith (30 mins.), Mr. A. D. Bruce (30 mins.), Mr. C. Thompson (30 mins.).

Weather tests of 15 minutes completed 13 hrs. 18 mins. for the week, all of course, on L.X. "Novocastria."

The second monthly whist drive, held at the Clubhouse on Wednesday, the 13th, was very successful, and the company of members and friends spent a very happy evening. The ladies' prize was presented by Mrs. R. N. Thompson, and was won by Miss L. Skelton. Mr. R. N. Thompson was first among the gentlemen, but returned his prize for offer at the next drive.

Capt. J. H. Boyd disposed of a large number of bogus lottery tickets, sold in aid of a very worthy local charity, and mixed his salesmanship with a lot of mirth-provoking suggestions.

A motoring member relates that, on approaching the ground on his first landing, he instinctively put his hand down to put on the "hand brake," and found the starting handle (of the "Moth," of course). No one cared to inquire whether he managed to reduce the landing speed of the machine or not in this way.

THE ROYAL AIR FORCE

London Gazette, January 12, 1926

General Duties Branch.

The follg. Flight Cadets having successfully passed through the R.A.F. Cadet College, Cranwell, are granted permanent commns. as Pilot Officers, with effect from and with seniority of Dec. 16, 1925:—C. M. Heard, H. G. Wisher, H. D. Spreckley, E. B. Steedman, V. O. Eyre, W. H. Merton, T. G. Pike, P. J. Stapleton, A. W. B. Hale, E. L. S. Ward, P. de C. F. Smith, A. L. Holden, R. F. Shenton, G. N. Pilcher, H. W. Charnock, H. F. G. Southey, H. W. Pearson-Rogers, E. B. Webb, A. R. Leslie-Melville, P. W. Lowe-Holmes, D. W. R. Ryley, J. B. M. Wallis, A. P. Bett, L. H. Anness, and J. V. Yonge.

The follg. are granted permanent commns. in the ranks stated (Jan. 1):—FLIGHT Lts.—A. R. Jones and W. J. Seward. FLYING OFFICERS.—L. G. Nixon, O. B. Swain.

The follg. Pilot Offrs. are promoted to rank of Flying Offr. (Dec. 15, 1925):—E. A. H. Fisher; H. R. Lowry. Wing Cmmr. T. G. Hetherington, C.B.E. is placed on h.p. scale B (Jan. 14).

The follg. are placed on the Retd. List at their own request:—Flight Lt. W. A. Skeate (Jan. 6); Observer Offr. H. J. White (Jan. 9); Flight Lt. C. E. Wardle (Jan. 13); Flying Offr. F. W. Barkley (Lt., Indian Army, ret'd.) resigns his short serv. commn. (Jan. 12). The follg. Flying Offrs. relinquish their short serv. commns. on account of ill-health (Jan. 12):—A. S. M. Meyrick-Jones; T. J. Woods. Flying Offr. F. J. C. Rybot (Lt. R. A.) relinquishes his temp. commn. on return to Army duty (Jan. 9).

Stores Branch.

Pilot Offr. St. J. F. Wintour is confirmed in his appt. in the Stores Bch, and is promoted to rank of Flying Offr. (Nov. 25, 1925); Flight Lt. K. A. Smith is placed on the Retd. List on account of ill-health (Jan. 13).

Accountant Branch.

The following Flying Offrs. are granted perm. commns. in the rank stated (Jan. 13):—J. Charles; M. H. Luker. The following Pilot Offrs. on probation are confirmed in rank and are promoted to the rank of Flying Offr. (Nov. 10,

1925):—K. E. M. Holmes; J. M. Murray. The follg. Pilot Offrs. on probation are confirmed in rank and are promoted to the rank of Flying Offr. with effect from Dec. 3, 1925, and with seny. on Nov. 10, 1925:—S. W. Hill, R. W. Collinson.

Medical Branch.

J. D'I. Rear is granted a short serv. commn. as a Flying Offr. for three years on the Active List, with effect from and with seny. of Jan. 1, and is sec'd. for emplmt. at Royal Sea Bathing Hosp., Margate, with effect from that date. Flying Offr. H. G. Maguire resigns his short serv. commn. (Jan. 13).

Reserve of Air Force Officers.

T. Buchanan is granted a commn. in Cl. A, Gen. Duties Bch., as a Flying Offr. on probation (Jan. 12); Flying Offr. H. W. G. Trotman is transf'd. from Cl. B to Cl. C (Sept. 3, 1925); Pilot Offr. G. B. Shillaker is transf'd. from Cl. A to Cl. C (Jan. 12); the commn. of Pilot Offr. on probation R. C. H. Joy is terminated on cessation of duty (Dec. 15, 1925).

London Gazette, January 15, 1926

General Duties Branch.

The following are granted Short Service commns. as Pilot Officers on probation with effect from and with seniority of the dates indicated:—

N. J. Anderson, G. M. Beattie, J. E. A. Binnie, T. J. L. Bradley, L. S. T. Brown, N. R. Buckle, W. B. Causer, G. R. T. Clarke, M. A. Cowan, P. H. Danger, A. P. de W. de Wyt, C. E. Eckersley-Maslin, C. L. Edwards, G. H. Godwin, W. E. W. Grieve, H. R. Hawker, J. E. McC. Henderson, D. J. R. Hylton, H. E. Milton, P. A. Moritz, A. W. H. Nelson, E. G. Olson, J. H. Pool, A. A. Radclyffe, H. T. A. Silcox, L. M. Timmins, L. S. Tindall, C. Warsaw, C. D. G. Welch (Sec. Lieut., H.A.C., Inf., T.A.); Jan. 6. F. H. Bailey; Jan. 7.

Pilot Officer on probation F. Priestman is confirmed in rank; Dec. 2, 1925. Wing Commander A. J. Miley, O.B.E., is seconded for two years' duty with the Chilean Navy; Jan. 19.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Flight Lieutenants.—W. E. G. Mann, D.F.C., J. T. Paine, and B. A. S. Lewin, to Electrical and Wireless Sch., Flowerdown; 10.1.26. R. J. Read, to No. 6 Group Headquarters, Kenley; 8.1.26.

Flying Officers.—W. C. Yale, C. F. Caunter, C. G. C. Sullivan, J. E. G. Thomas, and R. R. Bennett, to Electrical and Wireless Sch., Flowerdown; 10.1.26. E. A. Scales, to R.A.F. Depot; 22.1.26. R. A. P. Roberts, to No. 31 Sqn., India; 6.1.26. A. P. K. Hattersley, to No. 24 Sqn., Kenley on appointment to a Short Service Commn.; 11.1.26.

Pilot Officers.—R. H. Holmes, to Electrical and Wireless Sch., Flowerdown; 10.1.26. The following Pilot Officers are posted to R.A.F. Depot, on appointment to Short Service Commns. (on probation), pending posting overseas, with effect from 6.1.26:—N. J. Anderson, G. M. Beattie, J. E. A. Binnie, T. J. L. Bradley, L. S. T. Brown, N. R. Buckle, W. B. Causer, G. R. T. Clarke, M. A. Cowan, P. H. Danger, A. P. De Wouff De Wyt, C. E. Eckersley-Maslin, C. L. Edwards, G. H. Godwin, W. E. W. Grieve, H. R. Hawker, J. E. McC. Henderson, D. J. R. Hylton, H. E. Milton, P. A. Moritz, A. W. H. Nelson, E. G. Olson, J. H. Pool, A. A. Radclyffe, H. T. A. Silcox, L. M. Timmins, L. S. Tindall, C. Warsaw, and C. D. G. Welch. F. H. Bailey to R.A.F. Depot on appointment to Short Service Commn. (on probation), pending posting overseas, with effect from 7.1.26. J. H. C. Purvis and

L. A. Walsh, to remain at No. 2 Flying Training Sch., Digby, instead of to No. 25 Sqn., as previously notified. The following Pilot Officers are posted on appointment to Permanent Commns. from R.A.F. Cadet College with effect from 16.12.25:—C. M. Heard, to No. 2 Sqn., Manston; H. G. Wisher and P. de C. Festing-Smith, to No. 11 Sqn., Netheravon; H. D. Spreckley, to No. 12 Sqn., Andover; E. B. Steedman and A. W. B. Hale, to No. 25 Sqn., Hawkinge; V. O. Eyre, to No. 56 Sqn., Biggin Hill; W. H. Merton, A. P. Bett, and L. H. Anness, to No. 7 Sqn., Bircham Newton; T. G. Pike, to No. 56 Sqn., Biggin Hill; P. J. Stapleton, G. N. Pilcher, and A. R. Leslie-Melville, to No. 100 Sqn., Spittlegate; E. L. S. Ward, to No. 24 Sqn., Kenley; A. L. Holden, H. W. Charnock, and J. B. M. Wallis, to No. 32 Sqn., Kenley; R. F. Shenton and H. F. G. Southey, to R.A.F. Base, Calshot; H. W. Pearson-Rogers, to No. 13 Sqn., Andover; E. B. Webb, to No. 4 Sqn., S. Farnborough; P. W. Lowe-Holmes and D. W. R. Ryley, to No. 39 Sqn., Spittlegate; J. V. Yonge, to No. 16 Sqn., Old Sarum.

Stores Branch

Flying Officer.—P. H. Wynne-Burt to No. 3 Stores Depot, Milton; 9.1.26.

Medical Branch

Flying Officers.—L. I. Hyder and J. Magner, M.B., to Research Lab. and Med. Officers' School of Instruction, on appointment to Short Service Commn., for short course; 6.1.26

U.S. Aviation and Dollars

THE U.S. House of Representatives Appropriation Committee has recommended an expenditure on naval aviation of \$18,674,000 or nearly £3,735,000. This is an increase of \$3,693,000 over current funds, of which \$9,662,000 is to be applied to new aircraft and equipment. During the next ten years American aeronautics will be assisted by a fund of \$2,500,000 (£500,000) established by Mr. Daniel Guggenheim, the multi-millionaire copper-king, who last year gave \$500,000 (£100,000) to New York University for the establishment of a school of aeronautics. Oh, for a few British Guggenheims!

Full Scale Experiments.

THE paper read before the Institution of Aeronautical Engineers by Mr. C. Howarth, on January 12, dealt with Some Aspects of Full-Scale Experiments. As the title indicates,

the paper was of a technical character, and does not lend itself to summarising. As space does not permit of giving the paper in full, we must refer readers desiring to obtain a copy to the Minutes of Proceedings of the Inst. Ae. E., in which the paper will be published in full, as well as a report of the ensuing discussion.

Care and Maintenance of Tools.

We would remind our readers that it is on Tuesday, January 26, that Lieut. N. A. Olechnovitch, M.E., will read his paper on The Care and Maintenance of Tools as an Important Factor in Workshop Routine before the Institution of Aeronautical Engineers. The meeting will be held in the Lecture Room of the Junior Institution of Engineers, 39, Victoria Street, Westminster, S.W.1, and will commence at 6.30 p.m. and the reading of the paper will be followed by discussion.

SOCIETY OF MODEL AERONAUTICAL ENGINEERS

ON Tuesday, January 12, before a large gathering of members at the Central Y.M.C.A., Mr. W. E. Evans gave a lecture on "Model Aeroplane Propellers." After emphasising the importance of the propeller, or more strictly speaking, the airscrew, of an aeroplane and the necessity of drawing a complete design of same to suit the weight and flying speed of the model to ensure good flights, Mr. Evans proceeded to design a propeller to specification laid down in the rules for the recent propeller competition. This being very clearly and simply done, practical operations in forming the wood block, testing pitch angles, and finally balancing, were demonstrated. Laminated blocks were essential if correct pitch angles were to be depended upon for any length of time. A specimen laminated propeller 12 in. in diameter was shown with pitch angles O.K. after being in use for four years. This concluded the first part of the lecture, the second part followed immediately, and was even more instructive. The subject was "Testing Model Propellers for Static Thrust." The apparatus used for the tests was exhibited, and consisted of a small electric motor to which was attached a revolution indicator, these being mounted on a base-board which, when in use, is suspended by four fine piano wires from the ceiling of a room. A needle pointer below the baseboard registers the static thrust in ounces and fractions of an ounce on a calibrated scale fixed on a table. The suspension method, together with the slip stream of the propeller travelling away from the apparatus, eliminates all friction. The electric motor and revolution indicator are an improvement upon Mr. Evans's propeller-testing apparatus, which was in use by the Society four years ago when the power was obtained from a compressed-air container. Still further improvements in the machine are contemplated.

Many propellers, nearly all of 10 in. diameter, this having been found the most suitable size for the motor, but with different pitches and blade areas, were shown, with accompanying graphs recording static thrust at various speeds, including a variable pitch propeller with symmetrical blades, a three-bladed propeller, and a four-bladed one. The best graphs indicated thrusts of over 7 oz. at 2,500 revs., an important point being the fact that the maximum blade width had to be not less than $1\frac{1}{4}$ in., and not more than $1\frac{3}{16}$ in., any excess either way causing the thrust to drop.

Another important point not previously realised by most of the members was evident from all the graphs without exception, was that when the speed of the motor was doubled more than three times the thrust was obtained. The highest maximum thrust, 8 oz., was given by a three-bladed propeller, the pitch of which was equal to the diameter, viz., 10 in. The power absorbed by this propeller was only slightly more than that of a two-bladed propeller of same pitch and blade width, whilst an extra 1-oz. thrust was registered, the maximum revs. being 2,500 and 2,750 respectively for the full output of the motor.

The four-bladed propeller gave only 1,800 revs., with a maximum thrust of $6\frac{1}{2}$ oz. It was apparent, however, that this thrust is comparatively good for the number of revs. The graphs all showed the same characteristic curve and gave members food for thought as to how they were to maintain their durations of flight with a rubber motor and at the same time increase the speed of their propellers.

On January 26, at 7.30 p.m., there will be an ordinary meeting at the Y.M.C.A. Agenda as follows:—(1) Arrangement of programme for 1926. (2) Question of reducing subscriptions. (3) A Club Journal (edited by W. E. Evans). (4) Fuselage formula.

B. K. JOHNSON,
Technical Secretary.

Commercial Aviation in Japan

THE Japanese Government has been asked for an appropriation of 2,500,000 yen for the fiscal year 1925 for the purpose of extending the air service between Japan and the Asiatic continent, the Aerial Transportation Co. to receive a subsidy of 500,000 yen, and 2,000,000 yen being used to establish an air service between Osaka and Shanghai, and between Tokyo and Dairen.

Royal Aeronautical Society's Lectures

MAJOR J. S. BUCHANAN, A.F.R.Ae.S., will give a lecture this (Thursday) evening before the society on "The Schneider Cup Race, 1925." The next meeting will be the joint one with the Institution of Automobile Engineers (Inst.A.E. and not Inst. Ae.E. as, through a slip of the pen, it appeared in our diary of forthcoming events) at the Royal Society of Arts, on February 4.

IMPORTS AND EXPORTS, 1924-1925

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913. see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; for 1919, see "FLIGHT" for January 22, 1920; for 1920, see "FLIGHT" for January 13, 1921; for 1921, see "FLIGHT" for January 19, 1922; for 1922 see "FLIGHT" for January 18, 1923; for 1923, see "FLIGHT" for January 17, 1924; and for 1924, see "FLIGHT" for January 22, 1925.

	Imports.		Exports.		Re-Exports.	
	1924.	1925.	1924.	1925.	1924.	1925.
Jan. . .	2,213	3,546	52,239	83,728	2,219	291
Feb. . .	920	985	26,349	85,639	335	20
Mar. . .	11,381	—	34,113	56,881	509	9,355
Apr. . .	373	321	56,998	78,041	6,014	6,732
May . .	3,426	560	125,138	74,844	4,162	15,278
June . .	1,219	190	87,629	71,009	2,115	667
July . .	1,510	184	179,292	159,262	2,708	870
Aug. . .	687	469	247,982	113,054	950	—
Sept. .	4,383	1,224	67,749	111,237	641	213
Oct. . .	2,715	460	143,512	114,563	3,743	855
Nov. . .	2,349	837	100,505	84,163	1,007	2,314
Dec. . .	108	1,806	90,172	104,745	24	19,004
	31,284	10,582	1,210,104	1,137,166	20,698	55,599

PUBLICATIONS RECEIVED

Report No. 214.—Wing Spar Stress Charts and Wing Truss Proportions. By E. P. Warner. No. 217.—Preliminary Wing Model Tests in the Variable Density Wind Tunnel of the National Advisory Committee for Aeronautics. By Max M. Munk. No. 218.—Standard Atmosphere—Tables and Data. By W. S. Diehl. U.S. National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

Canadian Patent Office Record. Vol. LIII, No. 51. December 22, 1925. The Canadian Patent Office, Ottawa, Canada. Price 25 cents.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

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Published January 21, 1926

- 21,768. DE HAVILLAND AIRCRAFT CO., LTD., AND A. E. HAIG. Aerofoils. (244,813.)
- 22,545. DOUGLAS MOTORS, LTD., AND S. L. BAILEY. Pistons. (244,829.)
- 22,806. SPERRY GYROSCOPE CO. H Gyroscopic navigational apparatus. (244,843.)
- 25,660. J. TRNKA. Driving-gear for propellers and engine valve-gear of aircraft. (244,873.)
- 28,539. H. O. SHORT. Sheet-metal hulls for flying-boats and seaplanes. (244,898.)
- 30,613. T. M. BARLOW AND F. DUNCANSON. Floats for seaplanes, etc. (244,911.)

APPLIED FOR IN 1925.

Published January 21, 1926.

- 13,214. F. SIEGRIST. Direction-indicators. (244,994.)

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